

FROM ONE YEAR TO A COUPLE OF WEEKS

Optimization and Development of New Antenna Design using HFSS

Antenas Pluton uses ANSOFT HFSS for electromagnetic analysis of antennas, achieving a high level of approval and reducing the development lead time of its projects to the highest degree.

With a portfolio of more than 42 products designed specifically for the wireless communication segment, Antenas Pluton have achieved a great know-how on designing antennas with high performance and wide coverage, supplying exclusive products for the market.

GOALS

- Virtual prototyping and validation in compliance with ANATEL (National Telecommunication Agency) standards, reducing costs associated to the conventional prototype manufacturing and tests;
- Robust engineering assuring antennas with high performance;
- Development of new technologies and innovative designs.

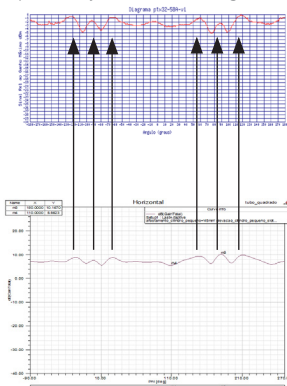
SOLUTION

By making use of parametric analysis and script features available on HFSS, Antenas Pluton was able to execute hundreds of simulations of an omnidirectional antenna virtual model in order to find the best geometry. The methodology adopted includes the carefully evaluation of all radiation patterns provided by the numerical simulations to attend ANATEL requirements. The best result was selected, and a real prototype was constructed. The results were compared to experimental measurements presenting an exceptionally good agreement. The official certification was achieved on the first prototype.

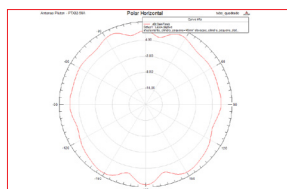
ADVANTAGES

- Complete analysis of an omnidirectional antenna with a wave guide transition type evaluating the horizontal polarization gain with respect to the maximum allowed deviation of 6dB;
- Development of complete new antenna designs, including parabolic dishes and directive antennas operating at very high frequencies;
- Significant reduction on the development time of new antennas though the use of parametric analysis of numerous computational models;
- Virtual validation of new products.

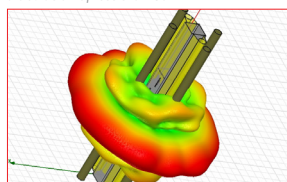
Experimentally measured horizontal gain



Horizontal gain on HFSS



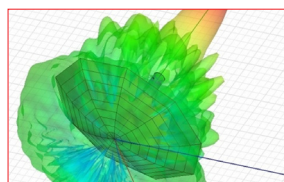
Polar plot displaying the horizontal gain with a deviation of less than 6dB



Full 3D radiation pattern on HFSS

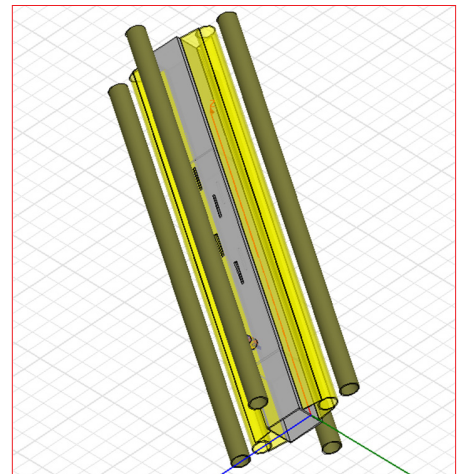


Parabolic dish antenna prototype



Parabolic dish antenna radiation pattern on HFSS

ANTENAS Pluton



Omnidirectional Antenna with orbital pipes



Final Prototype

“Before HFSS the development time of a new product was about 12 months. Now only 15 days are necessary. The simulated results were achieved on the first prototype. With HFSS we are now effectively developing innovative technologies.”

Flávio Augusto Franco Ferreira

Antenas PLUTON, Director

With HFSS the engineers can easily evaluate all antenna parameters and make sure that the first build prototype is going to be in compliance with all ANATEL requirements.